Update:
Rapid Environmental Impact Assessment - Sri Lanka Tsunami[1]

Summary
This report provides an update on critical environment issues related to short term relief and recovery activities in Sri Lanka. The update notes that:

- Sanitation in transitional shelters needs further attention, including the immediate development of environmentally sound ways to dispose of sewage.
- The disposal of debris created by the tsunami needs to take place in a more environmentally positive way through (1) the development and dissemination of a best practice approach, (2) better coordination and (3) adequate funding and material support.
- There is an immediate need for the development and uniform application of guidance for the environmentally sound selection of transitional shelter sites and the construction, management and decommissioning of these sites.
- Coordination of relief-related environmental issues remains poor. Rather than trying to improve coordination, it is likely more efficient to focus efforts on the know problem areas of sanitation, shelter and debris. Longer term reconstruction efforts, which should have stronger environmental impact review criteria, can address negative environment impacts of other relief and short term recovery activities which have not taken environmental considerations into account.

Introduction
This report updates post tsunami rapid environment impact assessment work done in Sri Lanka with relation to on-going relief and short term recovery activities. An initial quick assessment for major hazard chemical releases and contamination due to the tsunami was conducted by the UNDAC team in late December 2004. A more detailed rapid environmental impact assessment using a standard methodology and organization and community level input was conducted from 6 to 17 January 2005 (see **http://www.benfieldhrc.org/SiteRoot/disaster_studies/rea/rea_index.htm**).

The subsequent *Indian Ocean Tsunami Disaster of December 2004*: UNDAC Rapid Environmental Assessment[2], issued by Joint UNEP/OCHA Environment Unit in February 2005 focused on five issues: (1) debris management, (2) sanitation, (3) the impact of livelihood recovery on the environment, (4) coordination, and (5) the need to map the coastal zone to identify safe areas for reconstruction.

Reports indicate the government has marked out the 100 to 200 meters set-back for reconstruction for 33% of the affected coastal area. Efforts are underway (with OCHA support) to conduct aerial photography of the coastal area. These efforts have or will largely address the need to map out the coastal zone to permit safe reconstruction.

The following sections provide a brief update on the areas of sanitation, debris management and coordination. This update also considers the need to immediately address the environmental impacts of transitional shelter.

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[1] Prepared by C. Kelly, email: 72734.2412@compuserve.com. This update is based on a collaborative effort by Benfield Hazard Research Centre, CARE and JEU/OCHA and financed through the REA project under USAID/OFDA grant *DFD-A-00-04-00122-00*. The opinions expressed are those of the author and not of any of the organizations otherwise involved. Details on the REA project can be found at **http://www.benfieldhrc.org/SiteRoot/disaster_studies/rea/rea_index.htm**

[2] See http://ochaonline.un.org/ochaunep/

Sanitation
The location of many temporary and transitional shelters used by the tsunami displaced are in areas with high ground water. The high water level and concentration of users makes pit latrines less effective and increases the need for clearing and disposal of sewage in a time frame considerably shorter than in normal conditions. These conditions are expected to worsen during the monsoon and as more transitional shelters are established.

UNICEF has conducted a rapid assessment of water, sanitation and hygiene promotion activities in 319 existing transitional shelters. The results indicate that there is a shortage of latrines and gully suckers. These gaps are being addressed.

At the same time, the safe disposal of sewage posed significant challenges. The common option of over ground infiltration is not generally viable due to the sandy soils and a risk of groundwater pollution in areas were shallow wells are used for some or all water supplies. Disposal into lagoons or estuaries will risk water pollution. Disposal into the ocean risks near-shore water pollution and negative impacts on marine life.

Urgent action is needed by UNICEF, UNHCR (with experience in camp management in Sri Lanka and elsewhere), WHO, the Central Environmental Authority (CEA), Urban Development Authority and NGOs with experience in sanitation matters need to address the sewage disposal problem. A first step in this process will be to establish a way to reduce the volume of the sewage. This can be done by extracting and purifying most of the water in the sewage and treating the remaining sludge to safe decomposition and eventual transformation into fertilizer.

Debris Management
The tsunami resulted in a considerable volume of debris which needs to be disposed of in an environmentally sound manner. The UNDAC[3] team developed a debris management concept paper outlining a process to recycle and reuse as much of the debris as possible to minimize actual waste which needed to be land filled[4].

This concept was applied by authorities in Galle District in collaboration with the CEA, NGOs, USAID/OTI and the military. Similar efforts are reported to be underway elsewhere in Galle (CHF with a local NGO), Matara (Goal), Hambantoata (UNDP) and Ampara (USAID/OTI) districts.

While incorporating recycling, the current practices used in the Galle District fall short of best practice possible in Sri Lanka. At present, organic materials are being land-filled. These materials should be shredded and composted. The knowledge to do this is available in Sri Lanka. Shredders may need to be imported or can be made locally.

In addition, the remaining inorganic materials collected at a clean-up site and dumped include a considerable amount of sand and general dirt. This material does not necessarily need to be put in landfills. It can be recycled at the clean-up site or use as fill for transitional or permanent housing sites.

[3] United Nations Disaster Assessment and Coordination Team.
[4] The Central Environmental Authority issued debris disposal guidance which did not go a far operationally as the system developed in Galle.

If there is concern the inorganic debris is contaminated, then testing can be done under the supervision of the Central Environmental Authority. Note, however, that if contamination is a concern, then the debris should not be put in landfills until rendered safe.

Unfortunately, it does not appear that even the generally good practices developed in Galle and the areas indicated above are being commonly applied in most debris removal efforts in Sri Lanka. Reports indicate a continuing problem with the disposal of debris on beaches, in waterways and the indiscriminate and ad hoc piling of unprocessed debris on unprotected sites across the tsunami-affected area.

The failure of even a generally good practice debris management approach to be widely applied in Sri Lanka can be attributed to two factors. First, there is no overall coordination of the debris removal effort. Control of the process at the local level appears to be generally lacking due to insufficient personnel and time.

Second, best (or even just generally good) debris management practices do not appear to be well known to organizations conducting clean-up activities in Sri Lanka. This is a result of a lack of coordination as well as a failure to give debris management a priority in initial post-disaster plans and activities.

The tsunami debris will not go away by itself. It will continue to be a problem for health and sanitation as well as reconstruction efforts until clearance efforts are completed. If this clearance is not done according to the best practices possible in Sri Lanka, then future environmental and health problems are to be expected.

Solving the tsunami debris management problem requires three simple steps:

- Formalize and disseminate a Sri Lankan best practice for debris removal and disposal based on the Galle experience.
- Establish a debris clearance coordination structure in each District to ensure best practice is followed.
- Ensure adequate financial and material resources are provided to the clearance efforts. (Reports indicate no lack of funding for labor intensive or community based activities, the type of activities through which debris removal is accomplished.)

These three steps can be addressed through a proposed UNV project to support debris clearance efforts.

However, improper and ad hoc debris removal is continuing. Immediate action on these three steps is required to avoid future negative human and environmental impacts and the UNV project should be implemented in an urgent basis.

Finally, debris management efforts need to expand from clearing property to drainage systems (including lagoons) and possibly off-shore areas. The drainage systems need to be cleared to limit flooding during the monsoon. These efforts can integrated into general debris management programs. Clearing debris from off-short areas (between the beach and reef) is needed to allow fishing to resume, and to limit further damage to reef areas from debris washed into the ocean by the tsunami.

Shelter

Current policy is to move tsunami survivors who cannot find their own shelter from facilities such as schools to transitional shelters, constructed specifically as an interim measure before new

housing is build or damaged houses repaired[5]. An estimated 30,000 transitional shelters are needed.

Donors, NGOs and the Government have agreed policies and standards for the design, siting and construction of the temporary settlements. This guidance incorporates Sphere Standards and other best practice and calls for consideration of environmental issues and rapid environmental impact assessments of transitional housing.

The current status of transitional shelter efforts is not clear[6]. UNHCR, the designated IO/NGO coordinator for transition shelter efforts, is conducting a quick assessment of transitional shelter efforts. One factor which somewhat confuses the transitional shelter situation is that tents are being used for shelter in some locations.

Concerns have been expressed that tented sites, as well as other transition shelter locations, do not comply with the agreed policies and guidance and environmental concerns. Further, some transitional shelter sites pose human safety concerns because they are located near roads, in potential flood areas or are not built to resist cyclones and strong storms (to be expected during the coming monsoon.)

At present, environmental impact-based guidance on the selection of shelter sites and in the construction, management and decommissioning of these sites it limited to general siting criteria provided by the CEA. To be compliant with the transitional shelter policies and guidance established, more a detailed set of environmental impact assessment procedures are needed.

Models for the needed guidance exist in draft UNHCR procedures for site selection and CARE/USAID post-disaster shelter construction impact assessment tools. These and other materials need to be reformatted and focused to the specific conditions which exist in Sri Lanka as well as made easy to apply with minimal training.

Avoidable negative impacts will occur and shelter residents placed at unnecessary risk if a standard approach to assessing and managing the environmental impacts of transitional shelter is not developed and applied. As transitional shelter construction is on-going, developing and applying this guidance is a priority component of overall tsunami recovery efforts in Sri Lanka.

Coordination

Coordination on tsunami-related environmental issues has been lacking since the on-set of the disaster. The Ministry of the Environment failed to participate in the Government's Center for National Operations, which coordinated the overall initial tsunami response.

Relief and developmental NGOs have largely focused on relief operations and have not generally called attention to environmental issues as part of their assistance efforts[7]. While environmental NGOs have undertaken assessments, some at the instigation of Government

[5] The Government has promised free housing, grants ranging from 100,000 to 250,000 rupees for repairs or rebuilding and loans up to 500,000 rupees for the same purpose to tsunami survivors. This section does not discuss the environmental aspects of this longer term recovery program.
[6] See above for comments on sanitation in transitional shelters.
[7] Some exceptions are CARE and UNHabitat, which have had discussions with IUCN on collaboration on longer term recovery efforts.

offices, and issued policy documents, no concerted effort has been made to frame and influence relief and short term recovery operations in environmental terms[8].

The environmental focus within the initial UN response was split between UNDAC/OCHA and UNEP. OCHA/Colombo currently lacks capacity or mandate to focus on relief related environmental issues. UNEP efforts focus on a rapid environmental impact assessment[9] and longer term recovery programming, with little involvement in relief and short term recovery efforts.

The coordination of environmental issues in a disaster is not easy given that the environment is a cross-cutting issue. It is frequently hard to get a clear handle on specific environmental problems and solutions in a disaster. As well, the environment is often misinterpreted as just trees and wildlife, rather than something which has direct consequences on life and welfare. The result is that links between relief and negative environmental impacts are missed or misunderstood.

This said, it is remarkable that not even a de facto coordinating structure on environmental issues has developed. As the situation with debris management and shelter demonstrate, there are clear and pressing relief-related environmental issues which require attention.

The *Indian Ocean Tsunami Disaster of December 2004*: UNDAC Rapid Environmental Assessment suggested the "UNDP *… expanded monitoring activities to ensure that assistance … does not have unanticipated and unnecessary impacts on the environment*" and that "*A rapid screening of donor and international organisation projects – both planned and ongoing - … be undertaken … to ensure that negative environmental impacts are avoided or mitigated.*" Neither action, each of which would have improved coordination of relief-related environmental issues, has been taken.

In practical terms it is probably too late to establish a relief-focused environmental coordination process. The problems posed by shelter, sanitation and debris management can be managed through the efforts indicated above. Other relief-related environmental problems which will arise can be addressed through environmental reviews of reconstruction programs. These reviews should be conduced by donors and finance institutions funding the tsunami reconstruction effort and will be more rigorous that the rapid assessments on which this update is based.

The process of environmental problem identification and management in reconstruction planning and implementation would be strengthened by the strategic environmental assessment (SEA) proposed by the Netherlands. A SEA charts out immediate and long term environmental issues and options related to the overall recovery from the tsunami. This "big picture" view appears to be significantly lacking for relief, recovery and reconstruction plans and programs at present.

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[8] Environmental Foundation Ltd. produced Rebuilding after the tsunami: how to get it right, and a critique of the *Indian Ocean Tsunami Disaster of December 2004* report. The critique sets out many of the environmental issues related to the reconstruction effort. But environmental NGOs do not appear to have followed-up on these initiatives.

[9] The UNEP is funding environmental impacts assessments by the Ministry of Environment. This work is largely an assessment of damage and does not assess the environmental impact of relief or recovery projects. While the work will generate useful data, further steps are needed to assess whether planned or on-going recovery projects will have avoidable or acceptable negative environmental impacts.